

INPUT SET: S7433.raw

1 SEQUENCE LISTING
2

3 (1) General Information:

4
5 (i) APPLICANT: Amara, Susan G
6 Arriza, Jeffrey L7
8 (ii) TITLE OF INVENTION: Amino Acid Transporters and Uses9
10 (iii) NUMBER OF SEQUENCES: 1711
12 (iv) CORRESPONDENCE ADDRESS:13
14
15
16
17
18
19 (A) ADDRESSEE: Allegretti & Witcoff, Ltd.
(B) STREET: 10 South Wacker Drive, Suite 3000
(C) CITY: Chicago
(D) STATE: IL
(E) COUNTRY: USA
(F) ZIP: 6060620
21 (v) COMPUTER READABLE FORM:22
23
24 (A) MEDIUM TYPE: Floppy disk
(B) COMPUTER: IBM PC compatible
(C) OPERATING SYSTEM: PC-DOS/MS-DOS
(D) SOFTWARE: PatentIn Release #1.0, Version #1.2525
26 (vi) CURRENT APPLICATION DATA:27
28 (A) APPLICATION NUMBER: US 08/140,729
(B) FILING DATE: 20 OCT 1993
29 (C) CLASSIFICATION:30
31 (viii) ATTORNEY/AGENT INFORMATION:32
33 (A) NAME: Noonan, Kevin E
(B) REGISTRATION NUMBER: 35,303
34 (C) REFERENCE/DOCKET NUMBER: 93,50935
36 (ix) TELECOMMUNICATION INFORMATION:37
38 (A) TELEPHONE: 312-715-1000
(B) TELEFAX: 312-715-1234
39 (C) TELEX: 910-221-531740
41 (2) INFORMATION FOR SEQ ID NO:1:42
43 (i) SEQUENCE CHARACTERISTICS:44
45 (A) LENGTH: 63 base pairs
46 (B) TYPE: nucleic acid
47 (C) STRANDEDNESS: single
48 (D) TOPOLOGY: linear49
50 (ii) MOLECULE TYPE: cDNA

51 ENTERED

RAW SEQUENCE LISTING
PATENT APPLICATION US/08/140,729ADATE: 03/04/94
TIME: 11:22:10

INPUT SET: S7433.raw

52
53
54 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:
55
56 CTGRCRATG AARATGGCAG CCAGGGCYTC ATACAGGGCT GTGCCRTCCA TGTTRATGGT 60
57
58 RGC 63
59
60 (2) INFORMATION FOR SEQ ID NO:2:
61
62 (i) SEQUENCE CHARACTERISTICS:
63 (A) LENGTH: 1680 base pairs
64 (B) TYPE: nucleic acid
65 (C) STRANDEDNESS: single
66 (D) TOPOLOGY: linear
67
68 (ii) MOLECULE TYPE: cDNA
69
70 (ix) FEATURE:
71 (A) NAME/KEY: 5'UTR
72 (B) LOCATION: 1..30
73
74 (ix) FEATURE:
75 (A) NAME/KEY: CDS
76 (B) LOCATION: 31..1626
77
78 (ix) FEATURE:
79 (A) NAME/KEY: 3'UTR
80 (B) LOCATION: 1626..1680
81
82
83 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:
84
85 CACCTCTAGC TCGGAGCGGC GTGTAGCGCC ATG GAG AAG AGC AAC GAG ACC AAC 54
86 Met Glu Lys Ser Asn Glu Thr Asn
87 1 5
88
89 GGC TAC CTT GAC AGC GCT CAG GCG GGG CCT GCG GCC GGG CCC GGA GCT 102
90 Gly Tyr Leu Asp Ser Ala Gln Ala Gly Pro Ala Ala Gly Pro Gly Ala
91 10 15 20
92
93 CCG GGG ACC GCG GCG GGA CGC GCA CGG CGT TGC GCG CGC TTC CTG CGG 150
94 Pro Gly Thr Ala Ala Gly Arg Ala Arg Arg Cys Ala Arg Phe Leu Arg
95 25 30 35 40
96
97 CGC CAA GCG CTG GTG CTG CTC ACC GTG TCC GGG GTG CTG GCG GGC GCG 198
98 Arg Gln Ala Leu Val Leu Leu Thr Val Ser Gly Val Leu Ala Gly Ala
99 45 50 55
100
101 GGC CTG GGC GCG GCG TTG CGC GGG CTC AGC CTG AGC CGC ACG CAG GTC 246
102 Gly Leu Gly Ala Ala Leu Arg Gly Leu Ser Leu Ser Arg Thr Gln Val

RAW SEQUENCE LISTING
PATENT APPLICATION US/08/140,729ADATE: 03/04/94
TIME: 11:22:17

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105	ACC TAC CTG GCC TTC CCC GGC GAG ATG CTG CTC CGC ATG CTG CGC ATG			294
106	Thr Tyr Leu Ala Phe Pro Gly Glu Met Leu Leu Arg Met Leu Arg Met			
107	75	80	85	
108				
109	ATC ATC CTG CCG CTG GTG GTC TGC AGC CTG GTG TCG GGC GCC GCC TCG			342
110	Ile Ile Leu Pro Leu Val Val Cys Ser Leu Val Ser Gly Ala Ala Ser			
111	90	95	100	
112				
113	CTC GAT GCC AGC TGC CTC GGG CGT CTG GGC GGC ATC CGT GTC GCC TAC			390
114	Leu Asp Ala Ser Cys Leu Gly Arg Leu Gly Gly Ile Arg Val Ala Tyr			
115	105	110	115	120
116				
117	TTT GGC CTC ACC ACA CTG AGT GCC TCG GCG CTC GCC GTG GCC TTG GCG			438
118	Phe Gly Leu Thr Thr Leu Ser Ala Ser Ala Leu Ala Val Ala Leu Ala			
119	125	130	135	
120				
121	TTC ATC ATC AAG CCA GGA TCC GGT GCG CAG ACC CTT CAG TCC AGC GAC			486
122	Phe Ile Ile Lys Pro Gly Ser Gly Ala Gln Thr Leu Gln Ser Ser Asp			
123	140	145	150	
124				
125	CTG GGG CTG GAG GAC TCG GGG CCT CCT CCT GTC CCC AAA GAG ACG GTG			534
126	Leu Gly Leu Glu Asp Ser Gly Pro Pro Pro Val Pro Lys Glu Thr Val			
127	155	160	165	
128				
129	GAC TCT TTC CTC GAC CTG GCC AGA AAC CTG TTT CCC TCC AAT CTT GTG			582
130	Asp Ser Phe Leu Asp Leu Ala Arg Asn Leu Phe Pro Ser Asn Leu Val			
131	170	175	180	
132				
133	GTT GCA GCT TTC CGT ACG TAT GCA ACC GAT TAT AAA GTC GTG ACC CAG			630
134	Val Ala Ala Phe Arg Thr Tyr Ala Thr Asp Tyr Lys Val Val Thr Gln			
135	185	190	195	200
136				
137	AAC AGC AGC TCT GGA AAT GTA ACC CAT GAA AAG ATC CCC ATA GGC ACT			678
138	Asn Ser Ser Ser Gly Asn Val Thr His Glu Lys Ile Pro Ile Gly Thr			
139	205	210	215	
140				
141	GAG ATA GAA GGG ATG AAC ATT TTA GGA TTG GTC CTG TTT GCT CTG GTG			726
142	Glu Ile Glu Gly Met Asn Ile Leu Gly Leu Val Leu Phe Ala Leu Val			
143	220	225	230	
144				
145	TTA GGA GTG GCC TTA AAG AAA CTA GGC TCC GAA GGA GAA GAC CTC ATC			774
146	Leu Gly Val Ala Leu Lys Lys Leu Gly Ser Glu Gly Glu Asp Leu Ile			
147	235	240	245	
148				
149	CGT TTC TTC AAT TCC CTC AAC GAG GCG ACG ATG GTG CTG GTG TCC TGG			822
150	Arg Phe Phe Asn Ser Leu Asn Glu Ala Thr Met Val Leu Val Ser Trp			
151	250	255	260	
152				
153	ATT ATG TGG TAC GTA CCT GTG GGC ATC ATG TTC CTT GTT GGA AGC AAG			870

RAW SEQUENCE LISTING
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TIME: 11:22:23

INPUT SET: S7433.raw

154	Ile Met Trp Tyr Val Pro Val Gly Ile Met Phe Leu Val Gly Ser Lys			
155	265	270	275	280
156				
157	ATC GTG GAA ATG AAA GAC ATC ATC GTG CTG GTG ACC AGC CTG GGG AAA			918
158	Ile Val Glu Met Lys Asp Ile Ile Val Leu Val Thr Ser Leu Gly Lys			
159	285	290	295	
160				
161	TAC ATC TTC GCA TCT ATA TTG GGC CAT GTT ATT CAT GGA GGA ATT GTT			966
162	Tyr Ile Phe Ala Ser Ile Leu Gly His Val Ile His Gly Gly Ile Val			
163	300	305	310	
164				
165	CTG CCA CTT ATT TAT TTT GTT TTC ACA CGA AAA AAC CCA TTC AGA TTC			1014
166	Leu Pro Leu Ile Tyr Phe Val Phe Thr Arg Lys Asn Pro Phe Arg Phe			
167	315	320	325	
168				
169	CTC CTG GGC CTC CTC GCC CCA TTT GCG ACA GCA TTT GCT ACC TGC TCC			1062
170	Leu Leu Gly Leu Leu Ala Pro Phe Ala Thr Ala Phe Ala Thr Cys Ser			
171	330	335	340	
172				
173	AGC TCA GCG ACC CTT CCC TCT ATG ATG AAG TGC ATT GAA GAG AAC AAT			1110
174	Ser Ser Ala Thr Leu Pro Ser Met Met Lys Cys Ile Glu Glu Asn Asn			
175	345	350	355	360
176				
177	GGT GTG GAC AAG AGG ATC AGC AGG TTT ATT CTC CCC ATC GGG GCC ACC			1158
178	Gly Val Asp Lys Arg Ile Ser Arg Phe Ile Leu Pro Ile Gly Ala Thr			
179	365	370	375	
180				
181	GTG AAC ATG GAC GGA GCA GCC ATC TTC CAG TGT GTG GCC GCG GTG TTC			1206
182	Val Asn Met Asp Gly Ala Ala Ile Phe Gln Cys Val Ala Ala Val Phe			
183	380	385	390	
184				
185	ATT GCG CAA CTC AAC AAC ATA GAG CTC AAC GCA GGA CAG ATT TTC ACC			1254
186	Ile Ala Gln Leu Asn Asn Ile Glu Leu Asn Ala Gly Gln Ile Phe Thr			
187	395	400	405	
188				
189	ATT CTA GTG ACT GCC ACA GCG TCC AGT GTT GGA GCA GCA GGC GTG CCA			1302
190	Ile Leu Val Thr Ala Thr Ala Ser Ser Val Gly Ala Ala Gly Val Pro			
191	410	415	420	
192				
193	GCT GGA GGG GTC CTC ACC ATT GCC ATT ATC CTG GAG GCC ATT GGG CTG			1350
194	Ala Gly Gly Val Leu Thr Ile Ala Ile Ile Leu Glu Ala Ile Gly Leu			
195	425	430	435	440
196				
197	CCT ACT CAT GAC CTG CCT CTG ATC CTG GCT GTG GAC TGG ATT GTG GAC			1398
198	Pro Thr His Asp Leu Pro Leu Ile Leu Ala Val Asp Trp Ile Val Asp			
199	445	450	455	
200				
201	CGG ACC ACC ACG GTG GTG AAT GTG GAG GGG GAT GCC CTG GGT GCA GGC			1446
202	Arg Thr Thr Thr Val Val Asn Val Glu Gly Asp Ala Leu Gly Ala Gly			
203	460	465	470	
204				

INPUT SET: S7433.raw

205 ATT CTC CAC CAC CTG AAT CAG AAG GCA ACA AAG AAA GGC GAG CAG GAA 1494
206 Ile Leu His His Leu Asn Gln Lys Ala Thr Lys Lys Gly Glu Gln Glu
207 475 480 485
208
209 CTT GCT GAG GTG AAA GTG GAA GCC ATC CCC AAC TGC AAG TCT GAG GAG 1542
210 Leu Ala Glu Val Lys Val Glu Ala Ile Pro Asn Cys Lys Ser Glu Glu
211 490 495 500
212
213 GAG ACA TCG CCC CTG GTG ACA CAC CAG AAC CCC GCT GGC CCC GTG GCC 1590
214 Glu Thr Ser Pro Leu Val Thr His Gln Asn Pro Ala Gly Pro Val Ala
215 505 510 515 520
216
217 AGT GCC CCA GAA CTG GAA TCC AAG GAG TCG GTT CTG TGATGGGGCT 1636
218 Ser Ala Pro Glu Leu Glu Ser Lys Glu Ser Val Leu
219 525 530
220
221 GGGCTTGCG CTTGCCTGCC AGCAGTGATG TCCCCACCCCTG TTCA 1680
222
223
224 (2) INFORMATION FOR SEQ ID NO:3:
225
226 (i) SEQUENCE CHARACTERISTICS:
227 (A) LENGTH: 532 amino acids
228 (B) TYPE: amino acid
229 (D) TOPOLOGY: linear
230
231 (ii) MOLECULE TYPE: protein
232
233 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:
234
235 Met Glu Lys Ser Asn Glu Thr Asn Gly Tyr Leu Asp Ser Ala Gln Ala
236 1 5 10 15
237
238 Gly Pro Ala Ala Gly Pro Gly Ala Pro Gly Thr Ala Ala Gly Arg Ala
239 20 25 30
240
241 Arg Arg Cys Ala Arg Phe Leu Arg Arg Gln Ala Leu Val Leu Thr
242 35 40 45
243
244 Val Ser Gly Val Leu Ala Gly Ala Gly Leu Gly Ala Ala Leu Arg Gly
245 50 55 60
246
247 Leu Ser Leu Ser Arg Thr Gln Val Thr Tyr Leu Ala Phe Pro Gly Glu
248 65 70 75 80
249
250 Met Leu Leu Arg Met Leu Arg Met Ile Ile Leu Pro Leu Val Val Cys
251 85 90 95
252
253 Ser Leu Val Ser Gly Ala Ala Ser Leu Asp Ala Ser Cys Leu Gly Arg
254 100 105 110
255

INPUT SET: S7433.raw

256 Leu Gly Gly Ile Arg Val Ala Tyr Phe Gly Leu Thr Thr Leu Ser Ala
257 115 120 125
258
259 Ser Ala Leu Ala Val Ala Leu Ala Phe Ile Ile Lys Pro Gly Ser Gly
260 130 135 140
261
262 Ala Gln Thr Leu Gln Ser Ser Asp Leu Gly Leu Glu Asp Ser Gly Pro
263 145 150 155 160
264
265 Pro Pro Val Pro Lys Glu Thr Val Asp Ser Phe Leu Asp Leu Ala Arg
266 165 170 175
267
268 Asn Leu Phe Pro Ser Asn Leu Val Val Ala Ala Phe Arg Thr Tyr Ala
269 180 185 190
270
271 Thr Asp Tyr Lys Val Val Thr Gln Asn Ser Ser Gly Asn Val Thr
272 195 200 205
273
274 His Glu Lys Ile Pro Ile Gly Thr Glu Ile Glu Gly Met Asn Ile Leu
275 210 215 220
276
277 Gly Leu Val Leu Phe Ala Leu Val Leu Gly Val Ala Leu Lys Lys Leu
278 225 230 235 240
279
280 Gly Ser Glu Gly Glu Asp Leu Ile Arg Phe Phe Asn Ser Leu Asn Glu
281 245 250 255
282
283 Ala Thr Met Val Leu Val Ser Trp Ile Met Trp Tyr Val Pro Val Gly
284 260 265 270
285
286 Ile Met Phe Leu Val Gly Ser Lys Ile Val Glu Met Lys Asp Ile Ile
287 275 280 285
288
289 Val Leu Val Thr Ser Leu Gly Lys Tyr Ile Phe Ala Ser Ile Leu Gly
290 290 295 300
291
292 His Val Ile His Gly Gly Ile Val Leu Pro Leu Ile Tyr Phe Val Phe
293 305 310 315 320
294
295 Thr Arg Lys Asn Pro Phe Arg Phe Leu Leu Gly Leu Leu Ala Pro Phe
296 325 330 335
297
298 Ala Thr Ala Phe Ala Thr Cys Ser Ser Ser Ala Thr Leu Pro Ser Met
299 340 345 350
300
301 Met Lys Cys Ile Glu Glu Asn Asn Gly Val Asp Lys Arg Ile Ser Arg
302 355 360 365
303
304 Phe Ile Leu Pro Ile Gly Ala Thr Val Asn Met Asp Gly Ala Ala Ile
305 370 375 380
306

INPUT SET: S7433.raw

307 Phe Gln Cys Val Ala Ala Val Phe Ile Ala Gln Leu Asn Asn Ile Glu
308 385 390 395 400
309
310 Leu Asn Ala Gly Gln Ile Phe Thr Ile Leu Val Thr Ala Thr Ala Ser
311 405 410 415
312
313
314 Ser Val Gly Ala Ala Gly Val Pro Ala Gly Gly Val Leu Thr Ile Ala
315 420 425 430
316
317 Ile Ile Leu Glu Ala Ile Gly Leu Pro Thr His Asp Leu Pro Leu Ile
318 435 440 445
319
320 Leu Ala Val Asp Trp Ile Val Asp Arg Thr Thr Thr Val Val Asn Val
321 450 455 460
322
323 Glu Gly Asp Ala Leu Gly Ala Gly Ile Leu His His Leu Asn Gln Lys
324 465 470 475 480
325
326 Ala Thr Lys Lys Gly Glu Gln Glu Leu Ala Glu Val Lys Val Glu Ala
327 485 490 495
328
329 Ile Pro Asn Cys Lys Ser Glu Glu Glu Thr Ser Pro Leu Val Thr His
330 500 505 510
331
332 Gln Asn Pro Ala Gly Pro Val Ala Ser Ala Pro Glu Leu Glu Ser Lys
333 515 520 525
334
335 Glu Ser Val Leu
336 530
337
338 (2) INFORMATION FOR SEQ ID NO:4:
339
340 (i) SEQUENCE CHARACTERISTICS:
341 (A) LENGTH: 1680 base pairs
342 (B) TYPE: nucleic acid
343 (C) STRANDEDNESS: single
344 (D) TOPOLOGY: linear
345
346 (ii) MOLECULE TYPE: cDNA
347
348 (ix) FEATURE:
349 (A) NAME/KEY: 5'UTR
350 (B) LOCATION: 1..30
351
352 (ix) FEATURE:
353 (A) NAME/KEY: CDS
354 (B) LOCATION: 31..1656
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356 (ix) FEATURE:
357 (A) NAME/KEY: 3'UTR

RAW SEQUENCE LISTING
PATENT APPLICATION US/08/140,729ADATE: 03/04/94
TIME: 11:22:48

INPUT SET: S7433.raw

358 (B) LOCATION: 1657..1680
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 360 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:
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 362 AAAGAAGAGA CCCTCCTAGA AAAGTAAAAT ATG ACT AAA AGC AAT GGA GAA GAG 54
 363 Met Thr Lys Ser Asn Gly Glu Glu
 364 1 5
 365
 366 CCC AAG ATG GGG GGC AGG ATG GAG AGA TTC CAG CAG GGA GTC CGT AAA 102
 367 Pro Lys Met Gly Gly Arg Met Glu Arg Phe Gln Gln Gly Val Arg Lys
 368 10 15 20
 369
 370 CGC ACA CTT TTG GCC AAG AAG AAA GTG CAG AAC ATT ACA AAG GAG GTT 150
 371 Arg Thr Leu Leu Ala Lys Lys Val Gln Asn Ile Thr Lys Glu Val
 372 25 30 35 40
 373
 374 GTT AAA AGT TAC CTG TTT CGG AAT GCT TTT GTG CTG CTC ACA GTC ACC 198
 375 Val Lys Ser Tyr Leu Phe Arg Asn Ala Phe Val Leu Leu Thr Val Thr
 376 45 50 55
 377
 378 GCT GTC ATT GTG GGT ACA ATC CTT GGA TTT ACC CTC CGA CCA TAC AGA 246
 379 Ala Val Ile Val Gly Thr Ile Leu Gly Phe Thr Leu Arg Pro Tyr Arg
 380 60 65 70
 381
 382 ATG AGC TAC CGG GAA GTC AAG TAC TTC TCC TTT CCT GGG GAA CTT CTG 294
 383 Met Ser Tyr Arg Glu Val Lys Tyr Phe Ser Phe Pro Gly Glu Leu Leu
 384 75 80 85
 385
 386 ATG AGG ATG TTA CAG ATG CTG GTC TTA CCA CTT ATC ATC TCC AGT CTT 342
 387 Met Arg Met Leu Gln Met Leu Val Leu Pro Leu Ile Ile Ser Ser Leu
 388 90 95 100
 389
 390 GTC ACA GGA ATG GCG GCG CTA GAT AGT AAG GCA TCA GGG AAG TGG GAA 390
 391 Val Thr Gly Met Ala Ala Leu Asp Ser Lys Ala Ser Gly Lys Trp Glu
 392 105 110 115 120
 393
 394 TGC GGA GCT GTA GTC TAT TAT ATG ACT ACC ACC ATC ATT GCT GTG GTG 438
 395 Cys Gly Ala Val Val Tyr Tyr Met Thr Thr Ile Ile Ala Val Val
 396 125 130 135
 397
 398 ATT GGC ATA ATC ATT GTC ATC ATC ATC CAT CCT GGG AAG GGC ACA AAG 486
 399 Ile Gly Ile Ile Ile Val Ile Ile His Pro Gly Lys Gly Thr Lys
 400 140 145 150
 401
 402 GAA AAC ATG CAC AGA GAA GGC AAA ATT GTA CGA GTG ACA GCT GCA GAT 534
 403 Glu Asn Met His Arg Glu Gly Lys Ile Val Arg Val Thr Ala Ala Asp
 404 155 160 165
 405
 406 GCC TTC CTG GAC TTG ATC AGG AAC ATG TTA AAT CCA AAT CTG GTA GAA 582
 407 Ala Phe Leu Asp Leu Ile Arg Asn Met Leu Asn Pro Asn Leu Val Glu
 408 170 175 180

RAW SEQUENCE LISTING
PATENT APPLICATION US/08/140,729ADATE: 03/04/94
TIME: 11:22:55

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411	Ala Cys Phe Lys Gln Phe Lys Thr Asn Tyr Glu Lys Arg Ser Phe Lys			
412	185	190	195	200
413				
414	GTG CCC ATC CAG GCC AAC GAA ACG CTT GTG GGT GCT GTG ATA AAC AAT			678
415	Val Pro Ile Gln Ala Asn Glu Thr Leu Val Gly Ala Val Ile Asn Asn			
416	205	210	215	
417				
418	GTG TCT GAG GCC ATG GAG ACT CTT ACC CGA ATC ACA GAG GAG CTG GTC			726
419	Val Ser Glu Ala Met Glu Thr Leu Thr Arg Ile Thr Glu Glu Leu Val			
420	220	225	230	
421				
422	CCA GTT CCA GGA TCT GTG AAT GGA GTC AAT GCC CTG GGT CTA GTT GTC			774
423	Pro Val Pro Gly Ser Val Asn Gly Val Asn Ala Leu Gly Leu Val Val			
424	235	240	245	
425				
426	TTC TCC ATG TGC TTC GGT TTT GTG ATT GGA AAC ATG AAG GAA CAG GGG			822
427	Phe Ser Met Cys Phe Gly Phe Val Ile Gly Asn Met Lys Glu Gln Gly			
428	250	255	260	
429				
430	CAG GCC CTG AGA GAG TTC TTT GAT TCT CTT AAC GAA GCC ATC ATG AGA			870
431	Gln Ala Leu Arg Glu Phe Phe Asp Ser Leu Asn Glu Ala Ile Met Arg			
432	265	270	275	280
433				
434	CTG GTA GCA GTA ATA ATG TGG TAT GCC CCC GTG GGT ATT CTC TTC CTG			918
435	Leu Val Ala Val Ile Met Trp Tyr Ala Pro Val Gly Ile Leu Phe Leu			
436	285	290	295	
437				
438	ATT GCT GGG AAG ATT GTG GAG ATG GAA GAC ATG GGT GTG ATT GGG GGG			966
439	Ile Ala Gly Lys Ile Val Glu Met Glu Asp Met Gly Val Ile Gly Gly			
440	300	305	310	
441				
442	CAG CTT GCC ATG TAC ACC GTG ACT GTC ATT GTT GGC TTA CTC ATT CAC			1014
443	Gln Leu Ala Met Tyr Thr Val Thr Val Ile Val Gly Leu Leu Ile His			
444	315	320	325	
445				
446	GCA GTC ATC GTC TTG CCA CTC CTC TAC TTC TTG GTA ACA CGG AAA AAC			1062
447	Ala Val Ile Val Leu Pro Leu Leu Tyr Phe Leu Val Thr Arg Lys Asn			
448	330	335	340	
449				
450	CCT TGG GTT TTT ATT GGA GGG TTG CTG CAA GCA CTC ATC ACC GCT CTG			1110
451	Pro Trp Val Phe Ile Gly Gly Leu Leu Gln Ala Leu Ile Thr Ala Leu			
452	345	350	355	360
453				
454	GGG ACC TCT TCA AGT TCT GCC ACC CTA CCC ATC ACC TTC AAG TGC CTG			1158
455	Gly Thr Ser Ser Ser Ala Thr Leu Pro Ile Thr Phe Lys Cys Leu			
456	365	370	375	
457				
458	GAA GAG AAC AAT GGC GTG GAC AAG CGC GTC ACC AGA TTC GTG CTC CCC			1206
459	Glu Glu Asn Asn Gly Val Asp Lys Arg Val Thr Arg Phe Val Leu Pro			

RAW SEQUENCE LISTING
PATENT APPLICATION US/08/140,729ADATE: 03/04/94
TIME: 11:23:01

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460	380	385	390	
461				
462	GTA GGA GCC ACC ATT AAC ATG GAT GGG ACT GCC CTC TAT GAG GCT TTG			1254
463	Val Gly Ala Thr Ile Asn Met Asp Gly Thr Ala Leu Tyr Glu Ala Leu			
464	395	400	405	
465				
466	GCT GCC ATT TTC ATT GCT CAA GTT AAC AAC TTT GAA CTG AAC TTC GGA			1302
467	Ala Ala Ile Phe Ile Ala Gln Val Asn Asn Phe Glu Leu Asn Phe Gly			
468	410	415	420	
469				
470	CAA ATT ATT ACA ATC AGC ATC ACA GCC ACA GCT GCC AGT ATT GGG GCA			1350
471	Gln Ile Ile Thr Ile Ser Ile Thr Ala Thr Ala Ala Ser Ile Gly Ala			
472	425	430	435	440
473				
474	GCT GGA ATT CCT CAG GCG GGC CTG GTC ACT ATG GTC ATT GTG CTG ACA			1398
475	Ala Gly Ile Pro Gln Ala Gly Leu Val Thr Met Val Ile Val Leu Thr			
476	445	450	455	
477				
478	TCT GTC GGC CTG CCC ACT GAC GAC ATC ACG CTC ATC ATC GCG GTG GAC			1446
479	Ser Val Gly Leu Pro Thr Asp Asp Ile Thr Leu Ile Ile Ala Val Asp			
480	460	465	470	
481				
482	TGG TTC TTG GAT CGC CTC CGG ACC ACC AAC GTA CTG GGA GAC TCC			1494
483	Trp Phe Leu Asp Arg Leu Arg Thr Thr Asn Val Leu Gly Asp Ser			
484	475	480	485	
485				
486	CTG GGA GCT GGG ATT GTG GAG CAC TTG TCA CGA CAT GAA CTG AAG AAC			1542
487	Leu Gly Ala Gly Ile Val Glu His Leu Ser Arg His Glu Leu Lys Asn			
488	490	495	500	
489				
490	AGA GAT GTT GAA ATG GGT AAC TCA GTG ATT GAA GAG AAT GAA ATG AAG			1590
491	Arg Asp Val Glu Met Gly Asn Ser Val Ile Glu Glu Asn Glu Met Lys			
492	505	510	515	520
493				
494	AAA CCA TAT CAA CTG ATT GCA CAG GAC AAT GAA ACT GAG AAA CCC ATC			1638
495	Lys Pro Tyr Gln Leu Ile Ala Gln Asp Asn Glu Thr Glu Lys Pro Ile			
496	525	530	535	
497				
498	GAC AGT GAA ACC AAG ATG TAGACTAAC A TAAAGAAACA CTTT			1680
499	Asp Ser Glu Thr Lys Met			
500	540			
501				
502				
503	(2) INFORMATION FOR SEQ ID NO:5:			
504				
505	(i) SEQUENCE CHARACTERISTICS:			
506	(A) LENGTH: 542 amino acids			
507	(B) TYPE: amino acid			
508	(D) TOPOLOGY: linear			
509				
510	(ii) MOLECULE TYPE: protein			

RAW SEQUENCE LISTING
PATENT APPLICATION US/08/140,729ADATE: 03/04/94
TIME: 11:23:08

INPUT SET: S7433.raw

511
512 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:
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514 Met Thr Lys Ser Asn Gly Glu Glu Pro Lys Met Gly Gly Arg Met Glu
515 1 5 10 15
516
517 Arg Phe Gln Gln Gly Val Arg Lys Arg Thr Leu Leu Ala Lys Lys Lys
518 20 25 30
519
520 Val Gln Asn Ile Thr Lys Glu Val Val Lys Ser Tyr Leu Phe Arg Asn
521 35 40 45
522
523 Ala Phe Val Leu Leu Thr Val Thr Ala Val Ile Val Gly Thr Ile Leu
524 50 55 60
525
526 Gly Phe Thr Leu Arg Pro Tyr Arg Met Ser Tyr Arg Glu Val Lys Tyr
527 65 70 75 80
528
529 Phe Ser Phe Pro Gly Glu Leu Leu Met Arg Met Leu Gln Met Leu Val
530 85 90 95
531
532 Leu Pro Leu Ile Ile Ser Ser Leu Val Thr Gly Met Ala Ala Leu Asp
533 100 105 110
534
535 Ser Lys Ala Ser Gly Lys Trp Glu Cys Gly Ala Val Val Tyr Tyr Met
536 115 120 125
537
538 Thr Thr Thr Ile Ile Ala Val Val Ile Gly Ile Ile Val Ile Ile
539 130 135 140
540
541 Ile His Pro Gly Lys Gly Thr Lys Glu Asn Met His Arg Glu Gly Lys
542 145 150 155 160
543
544 Ile Val Arg Val Thr Ala Ala Asp Ala Phe Leu Asp Leu Ile Arg Asn
545 165 170 175
546
547 Met Leu Asn Pro Asn Leu Val Glu Ala Cys Phe Lys Gln Phe Lys Thr
548 180 185 190
549
550 Asn Tyr Glu Lys Arg Ser Phe Lys Val Pro Ile Gln Ala Asn Glu Thr
551 195 200 205
552
553 Leu Val Gly Ala Val Ile Asn Asn Val Ser Glu Ala Met Glu Thr Leu
554 210 215 220
555
556 Thr Arg Ile Thr Glu Glu Leu Val Pro Val Pro Gly Ser Val Asn Gly
557 225 230 235 240
558
559 Val Asn Ala Leu Gly Leu Val Val Phe Ser Met Cys Phe Gly Phe Val
560 245 250 255
561

RAW SEQUENCE LISTING
PATENT APPLICATION US/08/140,729ADATE: 03/04/94
TIME: 11:23:14

INPUT SET: S7433.raw

562 Ile Gly Asn Met Lys Glu Gln Gly Gln Ala Leu Arg Glu Phe Phe Asp
563 260 265 270
564
565 Ser Leu Asn Glu Ala Ile Met Arg Leu Val Ala Val Ile Met Trp Tyr
566 275 280 285
567
568 Ala Pro Val Gly Ile Leu Phe Leu Ile Ala Gly Lys Ile Val Glu Met
569 290 295 300
570
571 Glu Asp Met Gly Val Ile Gly Gly Gln Leu Ala Met Tyr Thr Val Thr
572 305 310 315 320
573
574
575 Val Ile Val Gly Leu Leu Ile His Ala Val Ile Val Leu Pro Leu Leu
576 325 330 335
577
578 Tyr Phe Leu Val Thr Arg Lys Asn Pro Trp Val Phe Ile Gly Gly Leu
579 340 345 350
580
581 Leu Gln Ala Leu Ile Thr Ala Leu Gly Thr Ser Ser Ser Ala Thr
582 355 360 365
583
584 Leu Pro Ile Thr Phe Lys Cys Leu Glu Glu Asn Asn Gly Val Asp Lys
585 370 375 380
586
587 Arg Val Thr Arg Phe Val Leu Pro Val Gly Ala Thr Ile Asn Met Asp
588 385 390 395 400
589
590 Gly Thr Ala Leu Tyr Glu Ala Leu Ala Ala Ile Phe Ile Ala Gln Val
591 405 410 415
592
593 Asn Asn Phe Glu Leu Asn Phe Gly Gln Ile Ile Thr Ile Ser Ile Thr
594 420 425 430
595
596 Ala Thr Ala Ala Ser Ile Gly Ala Ala Gly Ile Pro Gln Ala Gly Leu
597 435 440 445
598
599 Val Thr Met Val Ile Val Leu Thr Ser Val Gly Leu Pro Thr Asp Asp
600 450 455 460
601
602 Ile Thr Leu Ile Ile Ala Val Asp Trp Phe Leu Asp Arg Leu Arg Thr
603 465 470 475 480
604
605 Thr Thr Asn Val Leu Gly Asp Ser Leu Gly Ala Gly Ile Val Glu His
606 485 490 495
607
608 Leu Ser Arg His Glu Leu Lys Asn Arg Asp Val Glu Met Gly Asn Ser
609 500 505 510
610
611 Val Ile Glu Glu Asn Glu Met Lys Lys Pro Tyr Gln Leu Ile Ala Gln
612 515 520 525

RAW SEQUENCE LISTING
PATENT APPLICATION US/08/140,729ADATE: 03/04/94
TIME: 11:23:21

INPUT SET: S7433.raw

613
614 Asp Asn Glu Thr Glu Lys Pro Ile Asp Ser Glu Thr Lys Met
615 530 535 540
616
617
618 (2) INFORMATION FOR SEQ ID NO:6:
619
620 (i) SEQUENCE CHARACTERISTICS:
621 (A) LENGTH: 1800 base pairs
622 (B) TYPE: nucleic acid
623 (C) STRANDEDNESS: single
624 (D) TOPOLOGY: linear
625
626 (ii) MOLECULE TYPE: cDNA
627
628 (ix) FEATURE:
629 (A) NAME/KEY: 5'UTR
630 (B) LOCATION: 1..33
631
632 (ix) FEATURE:
633 (A) NAME/KEY: CDS
634 (B) LOCATION: 34..1755
635
636 (ix) FEATURE:
637 (A) NAME/KEY: 3'UTR
638 (B) LOCATION: 1756..1800
639
640 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:
641
642 GATAGTGCTG AAGAGGAGGG GCGTTCCCAG ACC ATG GCA TCT ACG GAA GGT GCC 54
643 Met Ala Ser Thr Glu Gly Ala
644 1 5
645
646 AAC AAT ATG CCC AAG CAG GTG GAA GTG CGA ATG CCA GAC AGT CAT CTT 102
647 Asn Asn Met Pro Lys Gln Val Glu Val Arg Met Pro Asp Ser His Leu
648 10 15 20
649
650 GGC TCA GAG GAA CCC AAG CAC CGG CAC CTG GGC CTG CGC CTG TGT GAC 150
651 Gly Ser Glu Pro Lys His Arg His Leu Gly Leu Arg Leu Cys Asp
652 25 30 35
653
654 AAG CTG GGG AAG AAT CTG CTG CTC ACC CTG ACG GTG TTT GGT GTC ATC 198
655 Lys Leu Gly Lys Asn Leu Leu Leu Thr Leu Thr Val Phe Gly Val Ile
656 40 45 50 55
657
658 CTG GGA GCA GTG TGT GGA GGG CTT CTT CGC TTG GCA TCT CCC ATC CAC 246
659 Leu Gly Ala Val Cys Gly Gly Leu Leu Arg Leu Ala Ser Pro Ile His
660 60 65 70
661
662 CCT GAT GTG GTT ATG TTA ATA GCC TTC CCA GGG GAT ATA CTC ATG AGG 294
663 Pro Asp Val Val Met Leu Ile Ala Phe Pro Gly Asp Ile Leu Met Arg

RAW SEQUENCE LISTING
PATENT APPLICATION US/08/140,729ADATE: 03/04/94
TIME: 11:23:27

INPUT SET: S7433.raw

664	75	80	85	
665				
666	ATG CTA AAA ATG CTC ATT CTG GGT CTA ATC ATC TCC AGC TTA ATC ACA			342
667	Met Leu Lys Met Leu Ile Leu Gly Leu Ile Ile Ser Ser Leu Ile Thr			
668	90	95	100	
669				
670	GGG TTG TCA GGC CTG GAT GCT AAG GCT AGT GGC CGC TTG GGC ACG AGA			390
671	Gly Leu Ser Gly Leu Asp Ala Lys Ala Ser Gly Arg Leu Gly Thr Arg			
672	105	110	115	
673				
674	GCC ATG GTG TAT TAC ATG TCC ACG ACC ATC ATT GCT GCA GTA CTG GGG			438
675	Ala Met Val Tyr Tyr Met Ser Thr Thr Ile Ile Ala Ala Val Leu Gly			
676	120	125	130	135
677				
678	GTC ATT CTG GTC TTG GCT ATC CAT CCA GGC AAT CCC AAG CTC AAG AAG			486
679	Val Ile Leu Val Leu Ala Ile His Pro Gly Asn Pro Lys Leu Lys Lys			
680	140	145	150	
681				
682	CAG CTG GGG CCT GGG AAG AAG AAT GAT GAA GTG TCC AGC CTG GAT GCC			534
683	Gln Leu Gly Pro Gly Lys Lys Asn Asp Glu Val Ser Ser Leu Asp Ala			
684	155	160	165	
685				
686	TTC CTG GAC CTT ATT CGA AAT CTC TTC CCT GAA AAC CTT GTC CAA GCC			582
687	Phe Leu Asp Leu Ile Arg Asn Leu Phe Pro Glu Asn Leu Val Gln Ala			
688	170	175	180	
689				
690	TGC TTT CAA CAG ATT CAA ACA GTG ACG AAG AAA GTC CTG GTT GCA CCA			630
691	Cys Phe Gln Gln Ile Gln Thr Val Thr Lys Lys Val Leu Val Ala Pro			
692	185	190	195	
693				
694	CCG CCA GAC GAG GAG GCC AAC GCA ACC AGC GCT GAA GTC TCT CTG TTG			678
695	Pro Pro Asp Glu Glu Ala Asn Ala Thr Ser Ala Glu Val Ser Leu Leu			
696	200	205	210	215
697				
698	AAC GAG ACT GTG ACT GAG GTG CCG GAG GAG ACT AAG ATG GTT ATC AAG			726
699	Asn Glu Thr Val Thr Glu Val Pro Glu Glu Thr Lys Met Val Ile Lys			
700	220	225	230	
701				
702	AAG GGC CTG GAG TTC AAG GAT GGG ATG AAC GTC TTA GGT CTG ATA GGG			774
703	Lys Gly Leu Glu Phe Lys Asp Gly Met Asn Val Leu Gly Leu Ile Gly			
704	235	240	245	
705				
706	TTT TTC ATT GCT TTT GGC ATC GCT ATG GGG AAG ATG GGA GAT CAG GCC			822
707	Phe Phe Ile Ala Phe Gly Ile Ala Met Gly Lys Met Gly Asp Gln Ala			
708	250	255	260	
709				
710	AAG CTG ATG GTG GAT TTC TTC AAC ATT TTG AAT GAG ATT GTA ATG AAG			870
711	Lys Leu Met Val Asp Phe Phe Asn Ile Leu Asn Glu Ile Val Met Lys			
712	265	270	275	
713				
714	TTA GTG ATC ATG ATC ATG TGG TAC TCT CCC CTG GGT ATC GCC TGC CTG			918

RAW SEQUENCE LISTING
PATENT APPLICATION US/08/140,729ADATE: 03/04/94
TIME: 11:23:34

INPUT SET: S7433.raw

715	Leu Val Ile Met Ile Met Trp Tyr Ser Pro Leu Gly Ile Ala Cys Leu			
716	280	285	290	295
717				
718	ATC TGT GGA AAG ATC ATT GCA ATC AAG GAC TTA GAA GTG GTT GCT AGG			966
719	Ile Cys Gly Lys Ile Ile Ala Ile Lys Asp Leu Glu Val Val Ala Arg			
720	300		305	310
721				
722	CAA CTG GGG ATG TAC ATG GTA ACA GTG ATC ATA GGC CTC ATC ATC CAC			1014
723	Gln Leu Gly Met Tyr Met Val Thr Val Ile Ile Gly Leu Ile Ile His			
724	315		320	325
725				
726	GGG GGC ATC TTT CTC CCC TTG ATT TAC TTT GTA GTG ACC AGG AAA AAC			1062
727	Gly Gly Ile Phe Leu Pro Leu Ile Tyr Phe Val Val Thr Arg Lys Asn			
728	330		335	340
729				
730	CCC TTC TCC CTT TTT GCT GGC ATT TTC CAA GCT TGG ATC ACT GCC CTG			1110
731	Pro Phe Ser Leu Phe Ala Gly Ile Phe Gln Ala Trp Ile Thr Ala Leu			
732	345		350	355
733				
734	GGC ACC GCT TCC AGT GCT GGA ACT TTG CCT GTC ACC TTT CGT TGC CTG			1158
735	Gly Thr Ala Ser Ser Ala Gly Thr Leu Pro Val Thr Phe Arg Cys Leu			
736	360		365	370
737				
738	GAA GAA AAT CTG GGG ATT GAT AAG CGT GTG ACT AGA TTC GTC CTT CCT			1206
739	Glu Glu Asn Leu Gly Ile Asp Lys Arg Val Thr Arg Phe Val Leu Pro			
740	380		385	390
741				
742	GTT GGA GCA ACC ATT AAC ATG GAT GGT ACA GCC CTT TAT GAA GCG GTG			1254
743	Val Gly Ala Thr Ile Asn Met Asp Gly Thr Ala Leu Tyr Glu Ala Val			
744	395		400	405
745				
746	GCC GCC ATC TTT ATA GCC CAA ATG AAT GGT GTT GTC CTG GAT GGA GGA			1302
747	Ala Ala Ile Phe Ile Ala Gln Met Asn Gly Val Val Leu Asp Gly Gly			
748	410		415	420
749				
750	CAG ATT GTG ACT GTA AGC CTC ACA GCC ACC CTG GCA AGC GTC GGC GCG			1350
751	Gln Ile Val Thr Val Ser Leu Thr Ala Thr Leu Ala Ser Val Gly Ala			
752	425		430	435
753				
754	GCC AGT ATC CCC AGT GCC GGG CTG GTC ACC ATG CTC CTC ATT CTG ACA			1398
755	Ala Ser Ile Pro Ser Ala Gly Leu Val Thr Met Leu Leu Ile Leu Thr			
756	440		445	450
757				
758	GCC GTG GGC CTG CCA ACA GAG GAC ATC AGC TTG CTG GTG GCT GTG GAC			1446
759	Ala Val Gly Leu Pro Thr Glu Asp Ile Ser Leu Leu Val Ala Val Asp			
760	460		465	470
761				
762	TGG CTG CTG GAC AGG ATG AGA ACT TCA GTC AAT GTT GTG GGT GAC TCT			1494
763	Trp Leu Leu Asp Arg Met Arg Thr Ser Val Asn Val Val Gly Asp Ser			
764	475		480	485
765				

RAW SEQUENCE LISTING
PATENT APPLICATION US/08/140,729ADATE: 03/04/94
TIME: 11:23:40

INPUT SET: S7433.raw

766	TTT GGG GCT GGG ATA GTC TAT CAC CTC TCC AAG TCT GAG CTG GAT ACC	1542
767	Phe Gly Ala Gly Ile Val Tyr His Leu Ser Lys Ser Glu Leu Asp Thr	
768	490	495
769	500	
770	ATT GAC TCC CAG CAT CGA GTG CAT GAA GAT ATT GAA ATG ACC AAG ACT	1590
771	Ile Asp Ser Gln His Arg Val His Glu Asp Ile Glu Met Thr Lys Thr	
772	505	510
773	515	
774	CAA TCC ATT TAT GAT GAC ATG AAG AAC CAC AGG GAA AGC AAC TCT AAT	1638
775	Gln Ser Ile Tyr Asp Asp Met Lys Asn His Arg Glu Ser Asn Ser Asn	
776	520	525
777	530	535
778	CAA TGT GTC TAT GCT GCA CAC AAC TCT GTC ATA GTA GAT GAA TGC AAG	1686
779	Gln Cys Val Tyr Ala Ala His Asn Ser Val Ile Val Asp Glu Cys Lys	
780	540	545
781	550	555
782	GTA ACT CTG GCA GCC AAT GGA AAG TCA GCC GAC TGC AGT GTT GAG GAA	1734
783	Val Thr Leu Ala Ala Asn Gly Lys Ser Ala Asp Cys Ser Val Glu Glu	
784	555	560
785	565	
786	GAA CCT TGG AAA CGT GAG AAA TAAGGATATG AGTCTCAGCA AATTCTTGAA	1785
787	Glu Pro Trp Lys Arg Glu Lys	
788	570	
789		
790	TAAACTCCCC AGCGT	1800
791		
792		
793	(2) INFORMATION FOR SEQ ID NO:7:	
794		
795	(i) SEQUENCE CHARACTERISTICS:	
796	(A) LENGTH: 574 amino acids	
797	(B) TYPE: amino acid	
798	(D) TOPOLOGY: linear	
799		
800	(ii) MOLECULE TYPE: protein	
801		
802	(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:	
803		
804	Met Ala Ser Thr Glu Gly Ala Asn Asn Met Pro Lys Gln Val Glu Val	
805	1	5
806	10	15
807	Arg Met Pro Asp Ser His Leu Gly Ser Glu Glu Pro Lys His Arg His	
808	20	25
809	30	
810	Leu Gly Leu Arg Leu Cys Asp Lys Leu Gly Lys Asn Leu Leu Leu Thr	
811	35	40
812	45	
813	Leu Thr Val Phe Gly Val Ile Leu Gly Ala Val Cys Gly Gly Leu Leu	
814	50	55
815	60	
816	Arg Leu Ala Ser Pro Ile His Pro Asp Val Val Met Leu Ile Ala Phe	

RAW SEQUENCE LISTING
PATENT APPLICATION US/08/140,729ADATE: 03/04/94
TIME: 11:23:46

INPUT SET: S7433.raw

817 65 70 75 80
818
819 Pro Gly Asp Ile Leu Met Arg Met Leu Lys Met Leu Ile Leu Gly Leu
820 85 90 95
821
822 Ile Ile Ser Ser Leu Ile Thr Gly Leu Ser Gly Leu Asp Ala Lys Ala
823 100 105 110
824
825 Ser Gly Arg Leu Gly Thr Arg Ala Met Val Tyr Tyr Met Ser Thr Thr
826 115 120 125
827
828 Ile Ile Ala Ala Val Leu Gly Val Ile Leu Val Leu Ala Ile His Pro
829 130 135 140
830
831 Gly Asn Pro Lys Leu Lys Lys Gln Leu Gly Pro Gly Lys Lys Asn Asp
832 145 150 155 160
833
834 Glu Val Ser Ser Leu Asp Ala Phe Leu Asp Leu Ile Arg Asn Leu Phe
835 165 170 175
836
837 Pro Glu Asn Leu Val Gln Ala Cys Phe Gln Gln Ile Gln Thr Val Thr
838 180 185 190
839
840 Lys Lys Val Leu Val Ala Pro Pro Pro Asp Glu Glu Ala Asn Ala Thr
841 195 200 205
842
843 Ser Ala Glu Val Ser Leu Leu Asn Glu Thr Val Thr Glu Val Pro Glu
844 210 215 220
845
846 Glu Thr Lys Met Val Ile Lys Lys Gly Leu Glu Phe Lys Asp Gly Met
847 225 230 235 240
848
849 Asn Val Leu Gly Leu Ile Gly Phe Phe Ile Ala Phe Gly Ile Ala Met
850 245 250 255
851
852 Gly Lys Met Gly Asp Gln Ala Lys Leu Met Val Asp Phe Phe Asn Ile
853 260 265 270
854
855 Leu Asn Glu Ile Val Met Lys Leu Val Ile Met Ile Met Trp Tyr Ser
856 275 280 285
857
858 Pro Leu Gly Ile Ala Cys Leu Ile Cys Gly Lys Ile Ile Ala Ile Lys
859 290 295 300
860
861 Asp Leu Glu Val Val Ala Arg Gln Leu Gly Met Tyr Met Val Thr Val
862 305 310 315 320
863
864 Ile Ile Gly Leu Ile Ile His Gly Gly Ile Phe Leu Pro Leu Ile Tyr
865 325 330 335
866
867 Phe Val Val Thr Arg Lys Asn Pro Phe Ser Leu Phe Ala Gly Ile Phe

INPUT SET: S7433.raw

868 340 345 350
869
870 Gln Ala Trp Ile Thr Ala Leu Gly Thr Ala Ser Ser Ala Gly Thr Leu
871 355 360 365
872
873
874 Pro Val Thr Phe Arg Cys Leu Glu Glu Asn Leu Gly Ile Asp Lys Arg
875 370 375 380
876
877 Val Thr Arg Phe Val Leu Pro Val Gly Ala Thr Ile Asn Met Asp Gly
878 385 390 395 400
879
880 Thr Ala Leu Tyr Glu Ala Val Ala Ala Ile Phe Ile Ala Gln Met Asn
881 405 410 415
882
883 Gly Val Val Leu Asp Gly Gly Gln Ile Val Thr Val Ser Leu Thr Ala
884 420 425 430
885
886 Thr Leu Ala Ser Val Gly Ala Ala Ser Ile Pro Ser Ala Gly Leu Val
887 435 440 445
888
889 Thr Met Leu Leu Ile Leu Thr Ala Val Gly Leu Pro Thr Glu Asp Ile
890 450 455 460
891
892 Ser Leu Leu Val Ala Val Asp Trp Leu Leu Asp Arg Met Arg Thr Ser
893 465 470 475 480
894
895 Val Asn Val Val Gly Asp Ser Phe Gly Ala Gly Ile Val Tyr His Leu
896 485 490 495
897
898 Ser Lys Ser Glu Leu Asp Thr Ile Asp Ser Gln His Arg Val His Glu
899 500 505 510
900
901 Asp Ile Glu Met Thr Lys Thr Gln Ser Ile Tyr Asp Asp Met Lys Asn
902 515 520 525
903
904 His Arg Glu Ser Asn Ser Asn Gln Cys Val Tyr Ala Ala His Asn Ser
905 530 535 540
906
907 Val Ile Val Asp Glu Cys Lys Val Thr Leu Ala Ala Asn Gly Lys Ser
908 545 550 555 560
909
910 Ala Asp Cys Ser Val Glu Glu Glu Pro Trp Lys Arg Glu Lys
911 565 570
912
913 (2) INFORMATION FOR SEQ ID NO:8:
914
915 (i) SEQUENCE CHARACTERISTICS:
916 (A) LENGTH: 1674 base pairs
917 (B) TYPE: nucleic acid
918 (C) STRANDEDNESS: single

**RAW SEQUENCE LISTING
PATENT APPLICATION US/08/140,729A**

DATE: 03/04/94
TIME: 11:23:59

INPUT SET: S7433.raw

919 (D) TOPOLOGY: linear
 920
 921 (ii) MOLECULE TYPE: cDNA
 922
 923 (ix) FEATURE:
 924 (A) NAME/KEY: 5'UTR
 925 (B) LOCATION: 1..15
 926
 927 (ix) FEATURE:
 928 (A) NAME/KEY: CDS
 929 (B) LOCATION: 16..1590
 930
 931 (ix) FEATURE:
 932 (A) NAME/KEY: 3'UTR
 933 (B) LOCATION: 1591..1674
 934
 935
 936 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:
 937
 938 ATAGCGGCCGA CAGCC ATG GGG AAA CCG GCG AGG AAA GGA TGC CCG AGT TGG 51
 939 Met Gly Lys Pro Ala Arg Lys Gly Cys Pro Ser Trp
 940 1 5 10
 941
 942 AAG CGC TTC CTG AAG AAT AAC TGG GTG TTG CTG TCC ACC GTG GCC GCG 99
 943 Lys Arg Phe Leu Lys Asn Asn Trp Val Leu Leu Ser Thr Val Ala Ala
 944 15 20 25
 945
 946 GTG GTG CTA GGC ATT ACC ACA GGA GTC TTG GTT CGA GAA CAC AGC AAC 147
 947 Val Val Leu Gly Ile Thr Thr Gly Val Leu Val Arg Glu His Ser Asn
 948 30 35 40
 949
 950 CTC TCA ACT CTA GAG AAA TTC TAC TTT GCT TTT CCT GGA GAA ATT CTA 195
 951 Leu Ser Thr Leu Glu Lys Phe Tyr Phe Ala Phe Pro Gly Glu Ile Leu
 952 45 50 55 60
 953
 954 ATG CGG ATG CTG AAA CTC ATC ATT TTG CCA TTA ATT ATA TCC AGC ATG 243
 955 Met Arg Met Leu Lys Leu Ile Leu Pro Leu Ile Ile Ser Ser Met
 956 65 70 75
 957
 958 ATT ACA GGT GTT GCT GCA CTG GAT TCC AAC GTA TCC GGA AAA ATT GGT 291
 959 Ile Thr Gly Val Ala Ala Leu Asp Ser Asn Val Ser Gly Lys Ile Gly
 960 80 85 90
 961
 962 CTG CGC GCT GTC GTG TAT TAT TTC TGT ACC ACT CTC ATT GCT GTT ATT 339
 963 Leu Arg Ala Val Val Tyr Tyr Phe Cys Thr Thr Leu Ile Ala Val Ile
 964 95 100 105
 965
 966 CTA GGT ATT GTG CTG GTG GTG AGC ATC AAG CCT GGT GTC ACC CAG AAA 387
 967 Leu Gly Ile Val Leu Val Val Ser Ile Lys Pro Gly Val Thr Gln Lys
 968 110 115 120
 969

RAW SEQUENCE LISTING
PATENT APPLICATION US/08/140,729ADATE: 03/04/94
TIME: 11:24:06

INPUT SET: S7433.raw

970	GTG GGT GAA ATT GCG AGG ACA GGC AGC ACC CCT GAA GTC AGT ACG GTG	435
971	Val Gly Glu Ile Ala Arg Thr Gly Ser Thr Pro Glu Val Ser Thr Val	
972	125 130 135 140	
973		
974	GAT GCC ATG TTA GAT CTC ATC AGG AAT ATG TTC CCT GAG AAT CTT GTC	483
975	Asp Ala Met Leu Asp Leu Ile Arg Asn Met Phe Pro Glu Asn Leu Val	
976	145 150 155	
977		
978	CAG GCC TGT TTT CAG CAG TAC AAA ACT AAG CGT GAA GAA GTG AAG CCT	531
979	Gln Ala Cys Phe Gln Gln Tyr Lys Thr Lys Arg Glu Glu Val Lys Pro	
980	160 165 170	
981		
982	CCC AGC GAT CCA GAG ATG AAC ATG ACA GAA GAG TCC TTC ACA GCT GTC	579
983	Pro Ser Asp Pro Glu Met Asn Met Thr Glu Glu Ser Phe Thr Ala Val	
984	175 180 185	
985		
986	ATG ACA ACT GCA ATT TCC AAG AAC AAA ACA AAG GAA TAC AAA ATT GTT	627
987	Met Thr Thr Ala Ile Ser Lys Asn Lys Thr Lys Glu Tyr Lys Ile Val	
988	190 195 200	
989		
990	GGC ATG TAT TCA GAT GGC ATA AAC GTC CTG GGC TTG ATT GTC TTT TGC	675
991	Gly Met Tyr Ser Asp Gly Ile Asn Val Leu Gly Leu Ile Val Phe Cys	
992	205 210 215 220	
993		
994	CTT GTC TTT GGA CTT GTC ATT GGA AAA ATG GGA GAA AAG GGA CAA ATT	723
995	Leu Val Phe Gly Leu Val Ile Gly Lys Met Gly Glu Lys Gly Gln Ile	
996	225 230 235	
997		
998	CTG GTG GAT TTC TTC AAT GCT TTG AGT GAT GCA ACC ATG AAA ATC GTT	771
999	Leu Val Asp Phe Asn Ala Leu Ser Asp Ala Thr Met Lys Ile Val	
1000	240 245 250	
1001		
1002	CAG ATC ATC ATG TGT TAT ATG CCA CTA GGT ATT TTG TTC CTG ATT GCT	819
1003	Gln Ile Ile Met Cys Tyr Met Pro Leu Gly Ile Leu Phe Leu Ile Ala	
1004	255 260 265	
1005		
1006	GGG AAG ATC ATA GAA GTT GAA GAC TGG GAA ATA TTC CGC AAG CTG GGC	867
1007	Gly Lys Ile Ile Glu Val Glu Asp Trp Glu Ile Phe Arg Lys Leu Gly	
1008	270 275 280	
1009		
1010	CTT TAC ATG GCC ACA GTC CTG ACT GGG CTT GCA ATC CAC TCC ATT GTA	915
1011	Leu Tyr Met Ala Thr Val Leu Thr Gly Leu Ala Ile His Ser Ile Val	
1012	285 290 295 300	
1013		
1014	ATT CTC CCG CTG ATA TAT TTC ATA GTC GTA CGA AAG AAC CCT TTC CGA	963
1015	Ile Leu Pro Leu Ile Tyr Phe Ile Val Val Arg Lys Asn Pro Phe Arg	
1016	305 310 315	
1017		
1018	TTT GCC ATG GGA ATG GCC CAG GCT CTC CTG ACA GCT CTC ATG ATC TCT	1011
1019	Phe Ala Met Gly Met Ala Gln Ala Leu Leu Thr Ala Leu Met Ile Ser	
1020	320 325 330	

RAW SEQUENCE LISTING
PATENT APPLICATION US/08/140,729ADATE: 03/04/94
TIME: 11:24:12

INPUT SET: S7433.raw

1021					
1022	TCC AGT TCA GCA ACA CTG CCT GTC ACC TTC CGC TGT GCT GAA GAA AAT				1059
1023	Ser Ser Ser Ala Thr Leu Pro Val Thr Phe Arg Cys Ala Glu Glu Asn				
1024	335	340	345		
1025					
1026	AAC CAG GTG GAC AAG AGG ATC ACT CGA TTC GTG TTA CCC GTT GGT GCA				1107
1027	Asn Gln Val Asp Lys Arg Ile Thr Arg Phe Val Leu Pro Val Gly Ala				
1028	350	355	360		
1029					
1030	ACA ATC AAC ATG GAT GGG ACC GCG CTC TAT GAA GCA GTG GCA GCG GTG				1155
1031	Thr Ile Asn Met Asp Gly Thr Ala Leu Tyr Glu Ala Val Ala Ala Val				
1032	365	370	375	380	
1033					
1034	TTT ATT GCA CAG TTG AAT GAC CTG GAC TTG GGC ATT GGG CAG ATC ATC				1203
1035	Phe Ile Ala Gln Leu Asn Asp Leu Asp Leu Gly Ile Gly Gln Ile Ile				
1036	385	390	395		
1037					
1038	ACC ATC AGT ATC ACG GCC ACA TCT GCC AGC ATC GGA GCT GCT GGC GTG				1251
1039	Thr Ile Ser Ile Thr Ala Thr Ser Ala Ser Ile Gly Ala Ala Gly Val				
1040	400	405	410		
1041					
1042	CCC CAG GCT GGC CTG GTG ACC ATG GTG ATT GTG CTG AGT GCC GTG GGC				1299
1043	Pro Gln Ala Gly Leu Val Thr Met Val Ile Val Ser Ala Val Gly				
1044	415	420	425		
1045					
1046	CTG CCC GCC GAG GAT GTC ACC CTG ATC ATT GCT GTC GAC TGG CTC CTG				1347
1047	Leu Pro Ala Glu Asp Val Thr Leu Ile Ile Ala Val Asp Trp Leu Leu				
1048	430	435	440		
1049					
1050	GAC CGG TTC AGG ACC ATG GTC AAC GTC CTT GGT GAT GCT TTT GGG ACG				1395
1051	Asp Arg Phe Arg Thr Met Val Asn Val Leu Gly Asp Ala Phe Gly Thr				
1052	445	450	455	460	
1053					
1054	GGC ATT GTG GAA AAG CTC TCC AAG AAG GAG CTG GAG CAG ATG GAT GTT				1443
1055	Gly Ile Val Glu Lys Leu Ser Lys Lys Glu Leu Glu Gln Met Asp Val				
1056	465	470	475		
1057					
1058	TCA TCT GAA GTC AAC ATT GTG AAT CCC TTT GCC TTG GAA TCC ACA ATC				1491
1059	Ser Ser Glu Val Asn Ile Val Asn Pro Phe Ala Leu Glu Ser Thr Ile				
1060	480	485	490		
1061					
1062	CTT GAC AAC GAA GAC TCA GAC ACC AAG AAG TCT TAT GTC AAT GGA GGC				1539
1063	Leu Asp Asn Glu Asp Ser Asp Thr Lys Lys Ser Tyr Val Asn Gly Gly				
1064	495	500	505		
1065					
1066	TTT GCA GTA GAC AAG TCT GAC ACC ATC TCA TTC ACC CAG ACC TCA CAG				1587
1067	Phe Ala Val Asp Lys Ser Asp Thr Ile Ser Phe Thr Gln Thr Ser Gln				
1068	510	515	520		
1069					
1070	TTC TAGGGCCCT GGCTGCAGAT GACTGGAAAC AAGGAAGGAC ATTCGTGAG				1640
1071	Phe				

INPUT SET: S7433.raw

1072 525
1073
1074 AGTCATCTCA AACACGGCTT AAGGAAAAGA GAAA 1674
1075
1076
1077 (2) INFORMATION FOR SEQ ID NO:9:
1078
1079 (i) SEQUENCE CHARACTERISTICS:
1080 (A) LENGTH: 525 amino acids
1081 (B) TYPE: amino acid
1082 (D) TOPOLOGY: linear
1083
1084 (ii) MOLECULE TYPE: protein
1085
1086 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:
1087
1088 Met Gly Lys Pro Ala Arg Lys Gly Cys Pro Ser Trp Lys Arg Phe Leu
1089 1 5 10 15
1090
1091 Lys Asn Asn Trp Val Leu Leu Ser Thr Val Ala Ala Val Val Leu Gly
1092 20 25 30
1093
1094 Ile Thr Thr Gly Val Leu Val Arg Glu His Ser Asn Leu Ser Thr Leu
1095 35 40 45
1096
1097 Glu Lys Phe Tyr Phe Ala Phe Pro Gly Glu Ile Leu Met Arg Met Leu
1098 50 55 60
1099
1100 Lys Leu Ile Ile Leu Pro Leu Ile Ile Ser Ser Met Ile Thr Gly Val
1101 65 70 75 80
1102
1103 Ala Ala Leu Asp Ser Asn Val Ser Gly Lys Ile Gly Leu Arg Ala Val
1104 85 90 95
1105
1106 Val Tyr Tyr Phe Cys Thr Thr Leu Ile Ala Val Ile Leu Gly Ile Val
1107 100 105 110
1108
1109 Leu Val Val Ser Ile Lys Pro Gly Val Thr Gln Lys Val Gly Glu Ile
1110 115 120 125
1111
1112 Ala Arg Thr Gly Ser Thr Pro Glu Val Ser Thr Val Asp Ala Met Leu
1113 130 135 140
1114
1115 Asp Leu Ile Arg Asn Met Phe Pro Glu Asn Leu Val Gln Ala Cys Phe
1116 145 150 155 160
1117
1118 Gln Gln Tyr Lys Thr Lys Arg Glu Glu Val Lys Pro Pro Ser Asp Pro
1119 165 170 175
1120
1121 Glu Met Asn Met Thr Glu Glu Ser Phe Thr Ala Val Met Thr Thr Ala
1122 180 185 190

RAW SEQUENCE LISTING
PATENT APPLICATION US/08/140,729ADATE: 03/04/94
TIME: 11:24:25

INPUT SET: S7433.raw

1123
1124 Ile Ser Lys Asn Lys Thr Lys Glu Tyr Lys Ile Val Gly Met Tyr Ser
1125 195 200 205
1126
1127 Asp Gly Ile Asn Val Leu Gly Leu Ile Val Phe Cys Leu Val Phe Gly
1128 210 215 220
1129
1130 Leu Val Ile Gly Lys Met Gly Glu Lys Gly Gln Ile Leu Val Asp Phe
1131 225 230 235 240
1132
1133
1134 Phe Asn Ala Leu Ser Asp Ala Thr Met Lys Ile Val Gln Ile Ile Met
1135 245 250 255
1136
1137 Cys Tyr Met Pro Leu Gly Ile Leu Phe Leu Ile Ala Gly Lys Ile Ile
1138 260 265 270
1139
1140 Glu Val Glu Asp Trp Glu Ile Phe Arg Lys Leu Gly Leu Tyr Met Ala
1141 275 280 285
1142
1143 Thr Val Leu Thr Gly Leu Ala Ile His Ser Ile Val Ile Leu Pro Leu
1144 290 295 300
1145
1146 Ile Tyr Phe Ile Val Val Arg Lys Asn Pro Phe Arg Phe Ala Met Gly
1147 305 310 315 320
1148
1149 Met Ala Gln Ala Leu Leu Thr Ala Leu Met Ile Ser Ser Ser Ala
1150 325 330 335
1151
1152 Thr Leu Pro Val Thr Phe Arg Cys Ala Glu Glu Asn Asn Gln Val Asp
1153 340 345 350
1154
1155 Lys Arg Ile Thr Arg Phe Val Leu Pro Val Gly Ala Thr Ile Asn Met
1156 355 360 365
1157
1158 Asp Gly Thr Ala Leu Tyr Glu Ala Val Ala Val Phe Ile Ala Gln
1159 370 375 380
1160
1161 Leu Asn Asp Leu Asp Leu Gly Ile Gly Gln Ile Ile Thr Ile Ser Ile
1162 385 390 395 400
1163
1164 Thr Ala Thr Ser Ala Ser Ile Gly Ala Ala Gly Val Pro Gln Ala Gly
1165 405 410 415
1166
1167 Leu Val Thr Met Val Ile Val Leu Ser Ala Val Gly Leu Pro Ala Glu
1168 420 425 430
1169
1170 Asp Val Thr Leu Ile Ile Ala Val Asp Trp Leu Leu Asp Arg Phe Arg
1171 435 440 445
1172
1173 Thr Met Val Asn Val Leu Gly Asp Ala Phe Gly Thr Gly Ile Val Glu

INPUT SET: S7433.raw

1174 450 455 460
1175
1176 Lys Leu Ser Lys Lys Glu Leu Glu Gln Met Asp Val Ser Ser Glu Val
1177 465 470 475 480
1178
1179 Asn Ile Val Asn Pro Phe Ala Leu Glu Ser Thr Ile Leu Asp Asn Glu
1180 485 490 495
1181
1182 Asp Ser Asp Thr Lys Lys Ser Tyr Val Asn Gly Gly Phe Ala Val Asp
1183 500 505 510
1184
1185
1186 Lys Ser Asp Thr Ile Ser Phe Thr Gln Thr Ser Gln Phe
1187 515 520 525
1188
1189
1190 (2) INFORMATION FOR SEQ ID NO:10:
1191
1192 (i) SEQUENCE CHARACTERISTICS:
1193 (A) LENGTH: 28 base pairs
1194 (B) TYPE: nucleic acid
1195 (C) STRANDEDNESS: single
1196 (D) TOPOLOGY: linear
1197
1198 (ii) MOLECULE TYPE: DNA (genomic)
1199
1200 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:
1201
1202 CGCGGGTACC GCCATGGAGA AGAGCAAC 28
1203
1204 (2) INFORMATION FOR SEQ ID NO:11:
1205
1206 (i) SEQUENCE CHARACTERISTICS:
1207 (A) LENGTH: 29 base pairs
1208 (B) TYPE: nucleic acid
1209 (C) STRANDEDNESS: single
1210 (D) TOPOLOGY: linear
1211
1212 (ii) MOLECULE TYPE: DNA (genomic)
1213
1214 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:
1215
1216 CGCGTCTAGA TCACAGAACC GACTCCTTG 29
1217
1218 (2) INFORMATION FOR SEQ ID NO:12:
1219
1220 (i) SEQUENCE CHARACTERISTICS:
1221 (A) LENGTH: 29 base pairs
1222 (B) TYPE: nucleic acid
1223 (C) STRANDEDNESS: single
1224 (D) TOPOLOGY: linear

INPUT SET: S7433.raw

1225
1226 (ii) MOLECULE TYPE: DNA (genomic)
1227
1228 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:
1229
1230 CGCGGGTACC AATATGACTA AAAGCAATG 29
1231
1232 (2) INFORMATION FOR SEQ ID NO:13:
1233
1234 (i) SEQUENCE CHARACTERISTICS:
1235 (A) LENGTH: 29 base pairs
1236 (B) TYPE: nucleic acid
1237 (C) STRANDEDNESS: single
1238 (D) TOPOLOGY: linear
1239
1240 (ii) MOLECULE TYPE: DNA (genomic)
1241
1242 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:
1243
1244 CGCGTCTAGA CTACATCTTG GTTTCACTG 29
1245
1246 (2) INFORMATION FOR SEQ ID NO:14:
1247
1248 (i) SEQUENCE CHARACTERISTICS:
1249 (A) LENGTH: 29 base pairs
1250 (B) TYPE: nucleic acid
1251 (C) STRANDEDNESS: single
1252 (D) TOPOLOGY: linear
1253
1254 (ii) MOLECULE TYPE: DNA (genomic)
1255
1256 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:
1257
1258 CGCGGGTACC ACCATGGCAT CTACGGAAG 29
1259
1260 (2) INFORMATION FOR SEQ ID NO:15:
1261
1262 (i) SEQUENCE CHARACTERISTICS:
1263 (A) LENGTH: 30 base pairs
1264 (B) TYPE: nucleic acid
1265 (C) STRANDEDNESS: single
1266 (D) TOPOLOGY: linear
1267
1268 (ii) MOLECULE TYPE: DNA (genomic)
1269
1270 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:
1271
1272 CGCGTCTAGA TTATTTCTCA CGTTCCAAG 30
1273
1274 (2) INFORMATION FOR SEQ ID NO:16:
1275

INPUT SET: S7433.raw

1276 (i) SEQUENCE CHARACTERISTICS:
1277 (A) LENGTH: 28 base pairs
1278 (B) TYPE: nucleic acid
1279 (C) STRANDEDNESS: single
1280 (D) TOPOLOGY: linear
1281
1282 (ii) MOLECULE TYPE: DNA (genomic)
1283
1284 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:
1285
1286 CGCGGGTACC GCCATGGGGA AACCGGCG 28
1287
1288 (2) INFORMATION FOR SEQ ID NO:17:
1289
1290 (i) SEQUENCE CHARACTERISTICS:
1291 (A) LENGTH: 28 base pairs
1292 (B) TYPE: nucleic acid
1293 (C) STRANDEDNESS: single
1294 (D) TOPOLOGY: linear
1295
1296 (ii) MOLECULE TYPE: DNA (genomic)
1297
1298 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:
1299
1300 CGCGGGATCC CTAGAACTGT GAGGTCTG 28
1301

PAGE: 1

SEQUENCE VERIFICATION REPORT
PATENT APPLICATION **US/08/140,729A**

DATE: 03/04/94
TIME: 11:24:47

INPUT SET: S7433.raw

Line

Error

Original Text

ENTERED

PAGE: 1

SEQUENCE MISSING ITEM REPORT
PATENT APPLICATION US/08/140,729A

DATE: 03/04/94
TIME: 11:24:47

INPUT SET: S7433.raw

APPLICATION NUMBER
FILING DATE
PRIOR APPLICATION DATA

PAGE: 1

SEQUENCE CORRECTION REPORT
PATENT APPLICATION US/08/140,729A

DATE: 03/04/94
TIME: 11:24:48

INPUT SET: S7433.raw

Line	Original Text	Corrected Text
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